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THE
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☞See advertisement on last page.

Poetry.

THE QUESTIONER.

BY ROBERT NICHOL.

I ask not for his lineage,
I ask not for his name;
If manliness be in his heart,
He noble birth may claim;
I care not though of this world's wealth
But slender be his part,
If "Yes," you answer when I ask,
Has he a true man's heart?

I ask not from what land he came,
Nor where his youth was nursed;
If pure the stream, it matters not
The spot from which it burst;
The palace or the hovel,
Where first his life began,
I seek not of—but answer this,
Is he an honest man.

Nay, blush not now—what matters it
Where first he drew his breath;
A manger was the cradle-bed
Of him of Nazareth,
Be naught, be any, every thing,
I care not what you be,
If "Yes," you answer when I ask,
Art thou Pure, True, and Free?

THOSE DIRTY MECHANICS.

BY H. G. BARRUS.

"These mechanics, oh dear! what a nuisance they are.
Remarked Mr. Fop to Miss Flirt;
"In the boat or the street they are sure to be there,
All covered with smut and with dirt.

"Why don't they go live on a street by themselves
And associate there with each other?
I would not to one of them speak in the street
No, not if that one were my brother.

"'Tis surprising to me my dear Mr Fop,
And I think it should straight be put down
That these dirty mechanics should dare to converse
With the aristocratic of town."

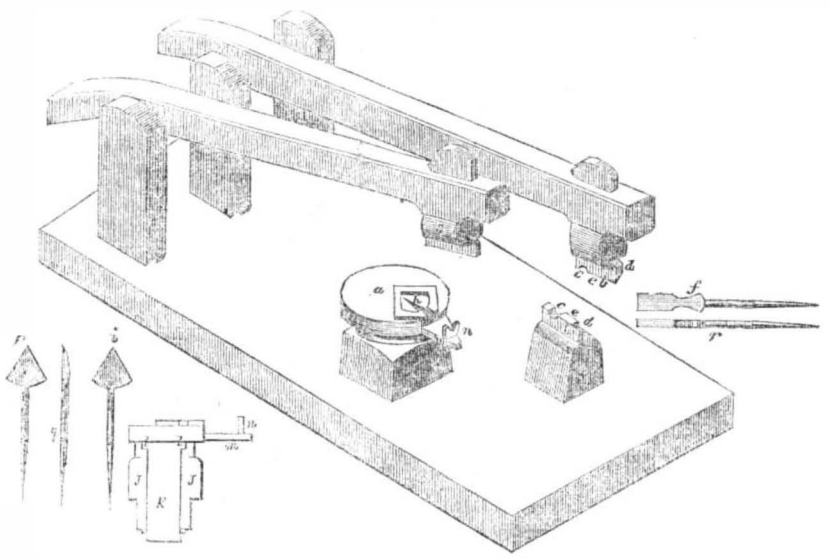
"Oh! had I the power, my dear Mistress Flirt,
I'd soon set these fellows afloat;
I'd make them all walk in the middle of the street,
And cross in a separate boat."

"And out of the pews in our church Mr. Fop,
I every mechanic would rouse;
And they should be seated in pews by themselves,
In the farthermost part of the house."

Pray stop your wild speech Mr. Fop and Miss Flirt,
And make you no farther ado;
Do you expect in the regions of bliss you will find,
A place parted off for you?

Then if for yourselves, you have any respect
Pray cease to traduce and deride;
For those whom you speak of and think of so light,
Are AMERICA'S GLORY AND PRIDE.

HOE-NECK AND TILT HAMMER.



The following is a specification of Nathan Brand's patent, of Leonardsville, county of Madison, N. Y. This valuable invention is for padding hoe necks, and also can be used for other purposes. The trip hammers are here displayed of the common form of lever, but the dies and stock are adapted for the purpose set forth, and are explained by the following references to the different parts of the above engraving.

The nature of this invention consists in the employment of the dies *b b*, having semi-circles *c c*, at one end for rounding the iron after it is drawn from the bar on that portion of the dies marked *e e*, which is constructed in the usual form. The end of the dies opposite the semi-circle and on the back side are brought to an edge on an angle of 45 degrees, as seen at *d d*. This portion is for cutting the neck from the bar and forging it in the required shape as represented at *f*. The die *h*, has a depression on its upper surface of the required depth and form and swedges the pad as seen at *i*, sectional back view and is attached to the upper part of the rotary stock *a* J J, receives the axle *k*, shouldered as represented at *l l*, the upper part of which has an arm *m m*, projecting parallel with the upper surface of the axle near the outer end and on the arm; standing at right angles with it is a fork-like projection *n n*, in the crotch of which the shank of the hoe neck or other articles to be padded or plated rests, add by which a rotary motion is given to the axle and the required portion of the die *h*, is brought under the hammer *o*. P, represents a front or face view of the hoe neck as seen in the back view *i*. *q*, is a side or edge view of the same; *r*, a side or edge view of the bar as forged and cut as seen at *f*.

CLAIM.—What I claim is the combination of the die *h*, with the rotary stock, for the purpose and in the manner described. I also claim composing the die *b*, of the flat face *e*, the groove *c*, and the cutter *d*, as described, so as to perform with the same instrument the three operations of hammering, rounding and cutting. NATHAN BRAND.

Rights and machines for sale. Address Nathan Brand, Leonardsville, N. Y.

The Capitol at Washington Illuminated.

The Capitol at Washington is now perhaps the best illuminated building in the world.—The old sperm lights are abolished and Mr. Crutchett has arranged and fitted up the gas lights in so tasteful and ingenious a manner that the Senate Chamber and House look like a scene in Aladdin's palace. Above the dome of the Rotunda, towers the great lantern filled with burners, and the chandeliers of both houses are superb. The one in the House of Representatives is ornamented with a beautiful scroll; that in the Senate by thirteen brilliant stars, representing the good old thirteen States, with their pendant prisms. These, reflected from the mirrors above, appear like double stars, and multiplied to nearly double the number. Each chandelier furnishes light equal to 5000 spermaceti candles. The lighting of the chamber is complete, enabling any one to read with perfect ease on any part of the floor, and the light though so powerful, is yet so soft that it is delightful to the eye.

The Romance of War.

A French soldier who accompanied the armies of Russia, concealed a small treasure at the entrance of a village near Wilna, with a view of taking it with him on his return. After the defeat at Moscow he was made prisoner and sent to Siberia, and only recoverod his liberty at the end of last year. On reaching Wilna, he remembered his hidden treasure, and after tracing out the spot where he had hidden it, he went to take it away. What was his astonishment to find, in place of his money, a small tin box containing a letter addressed to him, in which a commercial house was mentioned at Nancy, where he might receive the sum buried at interest, since the year 1812. The soldier supposed that this was all a hoax; he went, however, to the house pointed out, where he received his capital with twelve years interest. With this sum he established a small business at Nancy which enables him to live comfortably; but he has never been able, though he has taken great pains, to ascertain how his money was taken away and restored to him.

The Heart.

Trifle not with the human heart. It contains a thousand delicate strings; if you break one of which, it is not in the power of man to restore it again. If you are loved and cherished, be not indifferent. If you cannot repay that love, treat it not with contempt. There are thousands repining in sorrow and solitude that a word or a look might have saved from sorrow, and made happy.

Agriculture.

Agriculture, says Socrates, is an employment the most worthy the application of man the most ancient and the most suitable to his nature; it is the common nurse of all persons, in every age and condition of life; it is a source of health, strength, plenty and riches, and of a thousand sober pleasures. It is the mistress and school of sobriety, temperance, justice, religion, and in short of all virtue, civil, and military.

RAIL ROAD NEWS.

Central Ohio Railroad.

The report of Jonathan Knight, Engineer to the Ohio Central Railroad Company, making a reconnoissance of the route between Wheeling Va. and Columbus, Ohio, is published in the Zanesville Republican. The distance from Wheeling to Columbus is 150 miles The total rise and fall in this 150 miles may be about 2400 feet. Mr. Knight estimates the cost at $10,000 per mile for gradation, masonry and bridging of a width for a double track between Wheeling and Zanesville, 90 miles and $5000 per mile for the next 60

Various Railroads.

The Louisville and Franktort, Kentucky, Railroad has been surveyed and a very favorable route has been found.

The Burlington and Rutland Railroad, Vermont, is being rigorously prosecuted throughout the whole line; and the Cape Cod and Wareham, Mass., Railroad is progressing rapidly. The various lines of Railroad throughout the Union are progressing finely. More caution and sagacity are now displayed in choosing proper routes. Experience has taught our people the value of railroads, and at no distant day, we shall jump on the cars in Jersey City and pop down at our cousin's door in Louisville, Kentucky.

Richmond and Ohio Railroad.

A large meeting of the citizens of Richmond, Va., was lately held there in the Odd Fellows Hall, when Wm. H. Macfarlane, Esq. offered a series of resolutions, which were almost unanimously adopted, recommending the State of Virginia and the City of Richmond to subscribe liberally to the enterprise of speedily constructing the Richmond and Ohio Railroad. The business men of Richmond composed the meeting and the subscription books are now open, so there can be no doubt but this contemplated road will soon be commenced.

Chicago has subscribed one hundred and twenty thousand dollars for the construction of the railroad between Galena and that city. The amount of all the subscriptions on the part of the citizens of St. Louis, with a population of sixty thousand, to railroads macadamized roads, and other public improvements since her first settlement, is precisely—nothing! It is very possible, that the railroad from Galena, to Chicago, will have the effect of diverting a large portion of the lead trade from St. Louis to the younger and more enterprising cities of the lakes.—*Mo. Republican.*

Lines of Telegraph in Progress.

From Buffalo to Detroit, -	350	miles.
" Detroit to Milwaukie,	350	"
" Bridgeport to Montreal.	300	"
" Norwich to Worcester,	85	"
" Petersburgh to Raleigh,	144	"
" Raleigh to Charleston,	347	"
" Charleston to Savannah,	276	"
" Savannah to Montgomery,	260	"
" Montgomery to Mobile,	250	"
" Mobile to New Orleans,	150	"
" Lonisville to St. Louis,	300	"
Total, : :	2812	miles.

When Isaiah Thomas, printer of the Farmer's Almanac, was called upon by a printer's devil to known what he should put against the 13th of July, Mr. T. replied, anything, upon which the boy set rain, hail, and snow, at which the country was amazed but it so happened, that it did rain hail and snow on that day. and proved a profitable storm to the proprietor of the Almanac for the future numbers.

Keep your heart always ready for a misfortune.

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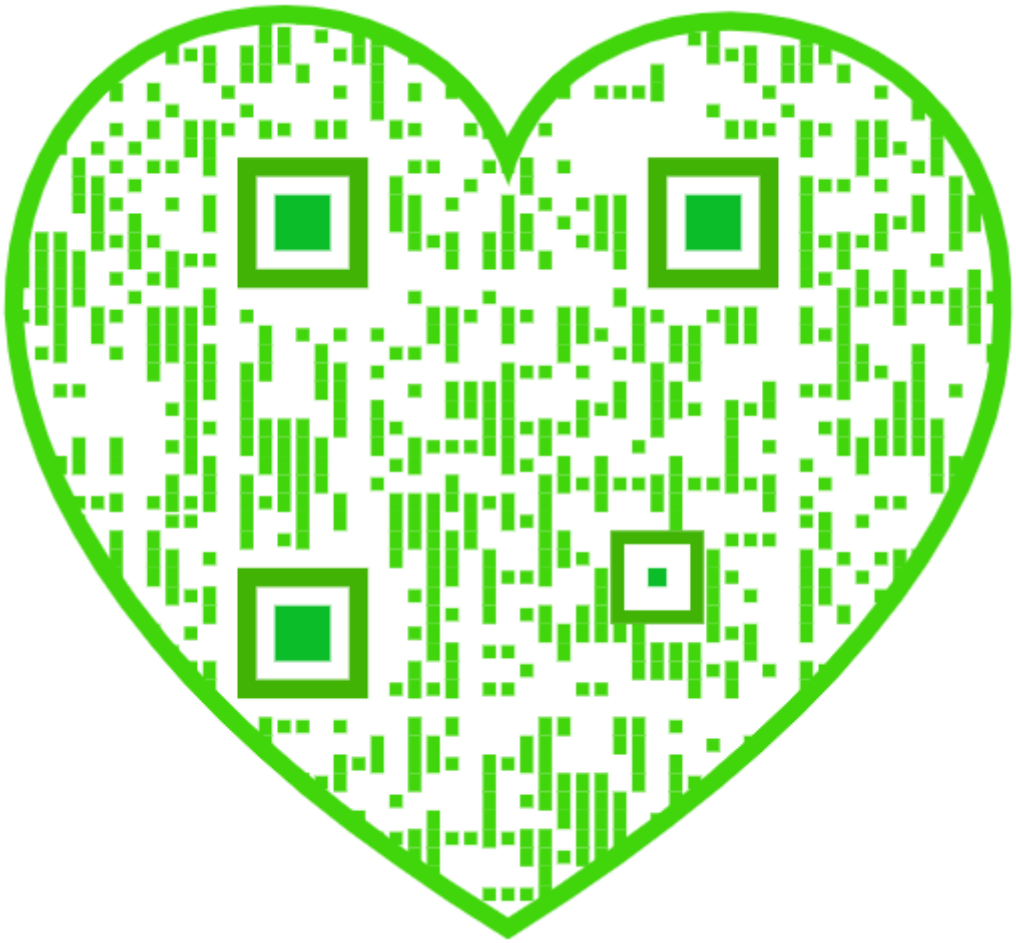

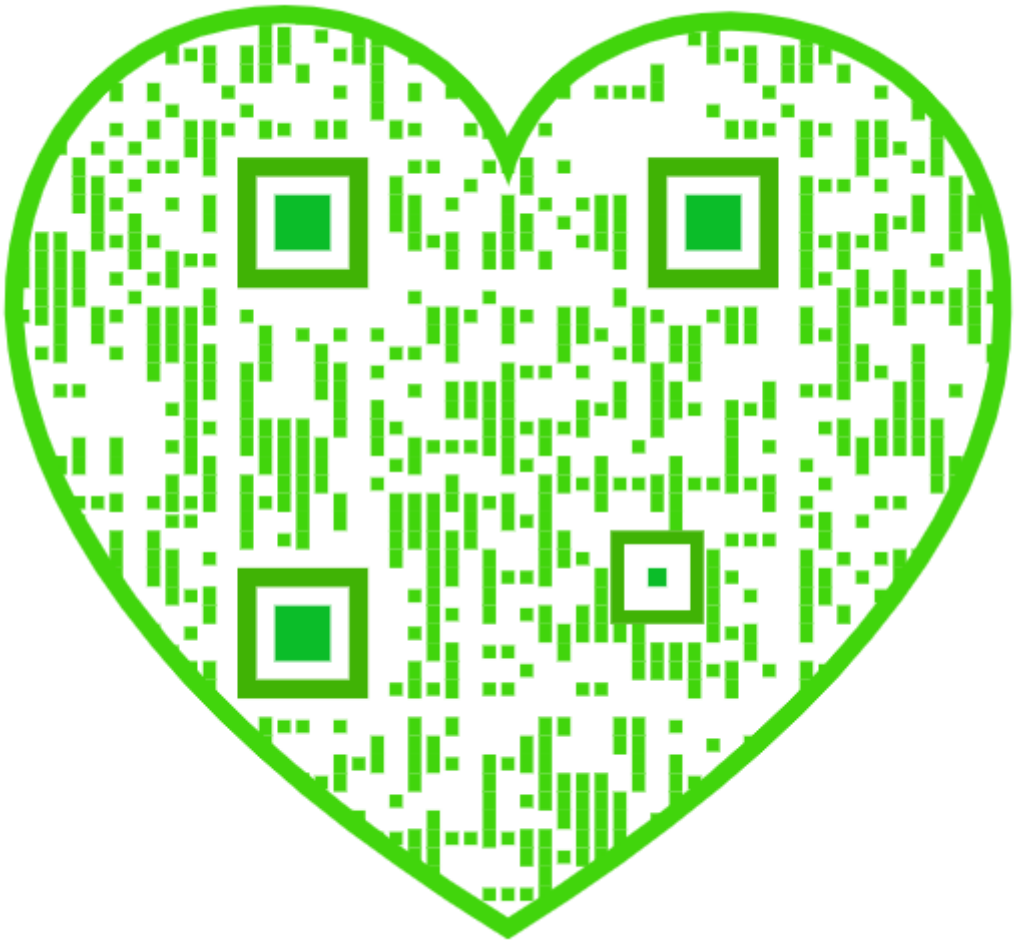

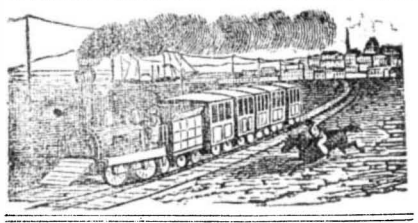

The President's Message.

Only that some scoundrel, who will undoubtedly be condemned yet to the shades of Erebus, cut the telegraph wires on Tuesday morning, the whole of the President's Message would have been circulated in our city printed in full on that evening. As it was we had it in full early Wednesday morning. The electric telegraph has made thought almost omnipresent. It is a most wonderful and invaluable invention.

The substance of the Message is a determination to occupy Mexico until a full indemnification is had for the war, and that indemnification, territory. The olive branch is no more to be held out by us. Orders have been sent to Mexico to secure the external and internal revenues of that country. Our army is now an army of occupation. More forces are requested to fill up the place of discharged volunteers.

The revenue is in a healthy condition, twenty six millions three hundred and forty six thousand dollars were received into the Treasury last year. The expenditures were fifty nine millions four hundred and fifty one thousand dollars Twenty four millions one hundred and twenty one thousand dollars in specie were imported last year into the United States, and the whole of this but about two millions has been detained in the country.—A Branch Mint is recommended to be established at New York.

The Message is a long one, and will be read with interest by every citizen. Being too long for our columns, of course we cannot publish it. The revenue and the war are the main features of it, with the exception of the Postal negociations now going on with the British government, which we hope will end amicably to all.

Mr. Winthrop of Mass. has been elected Speaker of the House of Representatives.

Omnibus Business in New York.

This is a branch of business in our city, the extent of which is scarcely to be imagined. It engages the attention of eighteen firms, with an aggregate capital of $730,000. The greatest number of coaches run by any one establishment is forty—the smallest is two. There are 326 coaches in all, the annual license money of which amounts to $5919. The number of persons regularly employed is over 800 besides the work given to hundreds of artificers in coach factories in building new vehicles. It is estimated that the repairs put on every omnibus before it is finally condemned, costs more than its original price. The iron tires of the wheels are an inch thick, and yet they need renewing every two months.

Is there not a most lucrative field here for investments in an Elevated Railway.

Steamboat Burnt.

One of the most heart rending and distressing disasters that ever occurred in this or in any other country took place on Sunday morning the 21st ult. The Propeller Phoenix, from Buffalo bound to Chicago, with two hundred passengers on board mostly emigrants of a very respectable appearance from Holland! was burned and every soul on board perished with the exception of thirty who escaped in small boats. It was a most horrible calamity. These poor people, after leaving the dangers of the Ocean, have suffered a most dreadful fate far, far from Faderland. The ashes of their bones are buried beneath the dark waves of Lake Michigan.

Choice Teas.

It gives us pleasure to be able to inform our readers where they can procure pure fresh Teas of every quality on reasonable terms.—The Canton and Pekin Tea Company of 137 Fulton street, keep the best assortment for a less price than any other dealers in the city. Their facilities for procuring *all* the choicest brands are such, that they are constantly supplied when at times other dealers cannot furnish certain choice brands.

Singular Accident.

The Philadelphia Ledger says that in a sugar refinery in that city a workman was badly scalded in the following manner. In the basement there is a large vessel called a heater: it is constructed on the outside of boiler iron and on the inside of copper, between the two metals there is a space for the circulation of steam, which was communicated through a pipe from the boiler of the steam engine.—The bottom of the copper vessel was round. A safety valve was attached to the steam conductor, which is supposed to have got out of order, and in consequence of the pressure of steam was so great as to produce an instantaneous reversion of the bottom of the kettle, and the result was that a portion of the heated sugar was thrown upward and came in contact with the ceiling, and falling from thence upon the man, produced serious injury.

A Whole Hog.

Mr. Duncan Smith of Caledonia, Livingston Co., is the owner of a hog which, for size and weight cannot be easily surpassed. He measures 8 feet in length, and girts around 7 feet. He weighed on the first day of June last, 750 pounds—measured 7 feet in length, and 6 feet in girth. Since that time he has not been weighed, but his weight is now estimated at 1000 pounds. He was 2 years old last august—is in lean condition and constantly growing —Compared with other animals of his species he is a giant among pigmies. Should there be any attempt of producing a larger specimen of his kind, we will send him a collection of our largest vegetables and try again. —*Rochester Advertiser.*

Parisian Antiquities.

The workmen employed in the Place du Parvis Notre Dame, at Paris, recently discovered several curious objects. Among these were found two shafts of a marble column, a fine medal in yellow copper of the reign of Louis XIII, human bones, part of a spout artistically worked, an enormous mass of masonry, appearing to indicate the place of a monument of the Roman Empire, and the foundation of a little chapel, dedicated in the middle ages to St. Christopher. Crowds surrounded the workmen in such numbers, that the Prefect of the Police was obliged to call out a strong force of sergens de ville and municipal guards, for the preservation of order.

Odd Fellows.

There is a great and lamentable quarrel in this now wealthy Order, The Grand Lodge of the United States has overturned all the acts of the late session of the Grand Lodge of this State. The language of the Grand Sire is not to be commended as based upon the harsh report of the committee. There ought to be a courtesy and friendliness of expression even in hot dispute.

Canal Tolls at Albany.

The amount received for tolls at the Collector's Office at Albany, from the commencement of navigation to the first of December, during the years 1846 and 1847, are as follows:—

1846.	$263,551 03
1847.	358,067 72
Showing an increase of over 35 per cent being.	$94,516 69

Mint Oil.

The Detroit Advertiser says, the manufacturing of mint oil is becoming an important branch in the products and exports of Michigan. In several places in the State, mint is cultivated largely, and we understand, profitably for the manufacture of mint oil. In St. Joseph County, it is carried on largely by ex-Gov. Barry. The value of oil shipped from there this fall, of his make, amounts to near $25,000.

Greenwood Cemetary.

Greenwood Cemetary contains 242 acres one half which is covered with woods of a natural growth, embracing the usual varieties found in the forests in this latitude. This the most extensive cemetary, in its superficial dimensions, upon this continent.

An Observatory in New York.

We learn that a number of gentleman, interested in the erection of an astronomical Observatory in this City propose taking measures to erect such an establishment.

Wisdom of Ancient Egypt.

The following speculations of Mr. Wild relative to the monuments of Egypt and Ethiopia, and their signification in reference to the mathematical and astronomical traditions are not a little singular:—From out of the simplest triangle not equilateral he derives the figures of the three pyramids of Ghizes—admired by men for the last four thousand years. He proves that their size bears an analogy to the measure of the globe; namely, that the largest exhibits a portion of the extent of the meridian—the second, the size of the parallel circle on which it stands—that the third implies a measure of time, the solar year. After the pyramids, follows the laying down of the position of cities, which flourished in times of remotest antiquity. The city of Memphis stood on the spot where the "half angle of the centre of the regular hexagon corresponds with the geographical latitude"—viz. at 30 degrees north latitude, the very spot where the pyramids also were erected. He also shows that along the meridian, running through the great pyramids, there extends a series of numbers, by any of which it is possible to ascertain the position of the temples and cities along the Nile—and thus he lays down the position of old Nero and Ethiopia.

Radiation of Heat.

For domestic purposes and health, quantity is preferable to intensity of heat. It is preferable to use a large stove with less fuel, than a smaller one with more fuel, as the large one diffuses the heat more generally. The Russians understand this, and they have immense masses of masonry and bricks, producing a large surface, and they build a fire at night which is intended to heat the room the following day. An intensely heated stove carbonizes the fine dust floating in the air, and this is drawn into the lungs, producing pulmonary and other complaints. Rooms heated by steam, hot water, &c., are the most pleasant.

Selfishness.

Selfishness has no soul. It is a heart of stone encased in iron. Selfishness cannot see the miseries of the world—it cannot feel the pangs of thirst and hunger. Who will fight manfully against a selfish disposition? It grows gradually, and when nurtured increases rapidly day by day. Prosperity and good luck feed the passion. Silver and gold make it laugh outright.—Who has not seen the eyes of the selfish water at depressed trade? Who has not seen him leap for joy at the rise of flour, while the poor were starving about him? Selfishness is a passion of hell, and good men should labor to keep it there.

Singular.

A workman in ivory in this city recently found an English rifle bullet in the centre of an elephant's tusk. It is presumable that it lodged their when the animal was quite young, especially as no trace of the passage of the bullet can be found, although a dark line or seam runs longitudinally in the neighborhood. The outer coat of the ball was much corroded.

Damages Against Railroads.

We learn from the Springfield (Mass.) Republican that in the case of Benjamin Ludlow vs. the Western Railroad Company the referees have awarded the complainant damages to the amount of $2,100. Mr. Ludlow, it will be remembered, was seriously injured on the road, some two years ago, by his wagon being capsized by the locomotive.

A Stuck Bridge.

The bridge over the Susquehanna, at Danville, which was recently finished and tested, is not in use. A dispute having taken place between the builder and the company, the former has taken up the plank flooring, and so made the bridge unserviceable. In other words, he refuses to plank the bridge till the directors plank the money.

Iron in Maine.

A quantity of iron ore has been discovered in Casco, in that State, a specimen of which has been melted at the Iron works of the Portland Company, with the most satisfactory results.

The Whitehall Democrat announces the close of navigation on the northern lakes.

Bachelors.

The bill lately introduced in the New York Legislature to tax bachelors seven dollars a year for the support of orphans define a bachelor to be—

"Every unmarried white male, unconvicted of crime, of good health. and fair physical proportions, and who is between the ages of 29 and 56 years, shall be deemed an old bachelor,"

Heavy Verdict.

The jury in the case of the St. Augustine's Church vs. the County of Philadelphia, rendered a verdict in favor of the plaintiff, assessing the damage at $47,433 87. This action, it will be recollected, arose from the destruction of the property of the plaintiff, during the disturbances between the foreign and native inhabitants of Philadelphia, which took place some two years since.

Inventors Institute.

We have received a communication from Mr. Rosevelt on this subject which will appear next week in our columns. It is a declaration of Principles of the Reformed Association of inventors.

Our List of Patents.

Our weekly list of patents had not arrived from Washington when our paper went to press. This has been a busy and exciting week at the Capitol. Our subscribers will therefore excuse this absence of our weekly patent list.

Chambers' Miscellany.

No. 8 of this interesting publication is out and for sale at Berford's, No. 2 Astor House.

Will Faa, the Gipsey King of Scotland, died lately at Kirk Yetholm in that country.—There is a tradition in the south of Scotland that one of the Countesses of Cassills run away with a gipsey chief named Faa.

The Courier des Etats Unis, gives an interesting account of cholera having been completely cured in the case of Mr. Bruno Taron, an eminent French surgeon, by the use of ether.

Death has been riding on the gale. About two hundred lives were lost in the steamer Phenix lately burned on Lake Michigan, and one hundred and seventy five in the steamer Talisman, sunk in the Mississippi.

"Yankee coachmakers," an English paper says, "are stealing a march upon our coach makers. The uniqueness and lightness of their build has occasioned a quick sale for some carriages lately brought here from New York"

Of 138 males in the Connecticut State Prison 84 declare intemperance to be the cause of their present confinement and degradation.

A widow said to her daughter, "When you are at my age, it will be time enough to dream of a husband." "Yes mama for a second time."

Xenophon tells us of an Egyptian who was sent by his wife to purchase perfumes brought her a jar of fresh water

Distress is increasing among the inhabitants of Newfoundland, and meetings have been held to beg assistance of the Queen to avert starvation.

The Covington Iron Works of Baltimore, have failed and thrown a thousand hands out of employment.

Our armies in Mexico have been instructed to furnish their own provender. They are to take their rations out of the Mexican bacon.

The American missionaries are laboring among the Nestorians of Orimiah with the consent of the Mar Shimon their Patriarch.

A great Chinese doctor is expected to arrive shortly in this city from Havannah, Many suppose him to be a bigger humbug than the Junk.

It was rumored at Washington, yesterday that Pedraza a friend of peace, had been nominated President of Mexico.

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Effect of Different Colored Lights upon Plants.

The warmth of the sun has comparatively little to do with the specific action of his rays on the chemical functions of the plant, which is illustrated by the experiments of Mr Hunt of the Royal Agricultural Society of England on the effect of the rays of light of different colors on the growing plant. He sowed cress seed, and exposed different portions of the soil in which the seeds were germinating, to the action of the red, yellow, green, and blue rays, which were transmitted by equal thicknesses of solutions of these different colors. "After ten days there was, under the blue fluid, a crop of cress of as bright a green, as any which grew in full light. and far more abundant. The crop was scanty under the green fluid, and of a pale green unhealthy color. Under the yellow solution only two or three plants appeared, but less pale than those under the green; while beneath the red a few more plants came up than under the yellow, though they were also of an unhealthy color. The red and blue colors being now mutually transferred, the crop formerly beneath the blue in a few days appeared blighted, while on the patch previously exposed to the red some additional plants sprung up."

Besides the rays of heat and of light, the sun-beam contains what have been called chemical rays, not distinguishable to our senses, but capable of being recognized by the chemical effects they produce. These rays appear to differ in kind, as the rays of different colored lights do. It is to the action of these chemical rays on the leaf, associated with the blue light on the solar beam, that the chemical influence of the sun on the growth of the plant is to be ascribed, by the decomposition of the carbonic acid absorbed from the air by the leaf of the plant on the interior of the leaf, the retention of the carbon, and the rejection or ommission of the oxygen contained in the carbonic acid of the plant, which is returned to the atmosphere, which carbon retained uniting with the elements of water (hydrogen or oxygen,) absorbed at the same time by the roots, give rise to and furnish the elements for the formation of woody, cellular fibre, &c., and for which cause it is that "*if light be excluded, vegatation never produces a leaf or a stock.*"

The decomposition of the carbonic acid contained in the atmosphere, and the emission of oxygen gas from plants, is determined by the solar light, pure oxygen gas is, therefore, separated by the action of light, and the operation is stronger as the light is more vivid. By this continued emission of vital air the Almighty thus incessantly purifies the air, and repairs the loss of oxygen occasioned by respiration, combustion, fermentation, putrefaction, and numerous other processes which have a tendency to contaminate this fluid, so essential to the vigor and comfort of animal life; so that, in this way, by the agency of light, a due equilibrium is always maintained between the constituent parts of the atmosphere.

A Little Knowledge not Dangerous.

Thomas Campbell once truly said that if we were to compare the value of much with that of little learning, there is no concession in favor of the much that we would not willingly make. But in comparing small acquisitions with none at all, it appears equally absurd to consider a little learning valueless, or even dangerous, as some will have it, as to talk of a lilttle wealth or health, or cheerfulness, or a little of any other blessing under heaven, being worthless or dangerous. To abjure any degree of information, because we cannot grasp the whole circle of sciences, or sound the depths of erudition, appears about as sensible as if we were to shut up our windows because they are too narrow, or because the glass has not the magnifying power of a telescope. For the smallest quantity of knowledge that a man can acquire, he is bound to be contentedly thankful provided that his fate shuts him out from the power of acquiring a larger portion; but whilst the possibility of farther advancement remains, let him be as proudly discontented as he pleases with his little learning.

Mankind make parade of their sorrows as they do of a new coat.

Queries—Galvanic Astronomy.

For the Scientific American.

Mr. Editor.—Will some of your readers answer the following questions:—

1. If I put a wire through as many heads as it will hold, then force more beads on at one end and others must pass off at the other end to make room for those forced on. Is it not somewhat thus with the electricity passing from a galvanic battery to a wire already charged? Ergo: Is it not more reasonable to suppose that a wire passing many miles through the air thereby becomes charged with electricity, an *inelastic* and imponderable substance; so that when more electricity from the battery is forced on one end of the wire, it moves all of the electricity which was on the wire *before* the battery was applied, so as to push off at *one* end as the battery forces on at the *other?*

2. If in Cincinnati I take the altitude of a planet and find it to be 86 3-4 degrees above the eastern horizon, and at the same time by aid of the Magnetic Telegraph.) have its altitude taken at a point 900 miles from my station in Cincinnati, and find it to be 87 degrees above the eastern horizon at the latter station; than by calculation find the planet's distance from the centre of the earth?

3. Can the Magnetic Telegraph be advantageously used in astronomical calculation, or in measuring distances?

4. If the A. D. 1847 commenced 15 degrees east of New York one hour *before* it did in New York, where it commenced one hour before it did 15 degrees west of that city—I wish to know where it FIRST commenced?

M. Kelly.

The Rifle.

Many persons who are very expert in the use of the rifle know nothing of the principle upon which it operates, and would be at a loss if asked why a grooved barrel throws a ball truer than a smooth bore The reasons are these:—

In the first place no bullet is, or can be cast perfectly spherical. One side is always heavier than another. The ball, therefore, always swerves, from the right line of projection. However hard it may be to prove this, theoretically practice demonstrates it. The same smooth bore, immovably fixed twice loaded with the same charge, of the same powder, with balls cast in the same mould, will not plant in the same spot at the same distance.

The rifle barrel is a female screw, which gives the tightly driven ball a rotary motion, so that the ball or rather the slug, swerves with one twist of the screw, another revolution corrects the errors. There are but three motions in the rifle ball, the stright forward, the spiral and the downward, caused by the power of gravity. A rifle of thirty to the pound drops its ball about a foot in a hundred yards rifles are sighted, therefore, to meet this deviation. On leaving the barrel, the ball moves above the line of sight, continually falling in a parallel curve till it intersects it. The point of intersection is called the point blank.

Who invented the rifle is unknown. Its principle was known to the North American Indians before the continent was discovered. Their arrows are feathered spirally, and move precisely in the same manner as a rifle ball.

By experiments recently made in the British Navy, it has been proved that an egg shaped bullet will be carried to as great a distance by a smooth bore as a spherical bullet by a cut gun The egg bullets experimented with were lighter at one end than the other. Egg shaped bullets are often preferred by our best shots to any other kind.

Gold.

The good people of Tecumseh, Michigan, are congratulating themselves upon the discovery of native gold in the vicinity of their village.—Several pieces of very pure gold ore have been obtained, and arrangements are being made to prosecute the work of mining with vigor.

Michigan is rich in agricultural and mineral wealth. Her prairies and oak openings furnish with comparatively little labor, abundant crops of wheat. She has also valuable beds of coat copper, and iron.

Action of White Lead with Oil.

Every one may have noticed that paint in which white lead is mixed, after it has been applied a while, cracks, and scales off. This is explained by the fact that lead exerts a chemical action on oils, in consequence of which the oil, when in combination with the lead continues to harden, until at last under the various changes of the atmosphere, it becomes brittle, breaks into scales, and cleaves off. On account of this action, it is thought that no white lead should be used in the "priming" coat, in painting buildings or articles which are not designed to be white. Black paint is more durable than white. This may have been noticed where, as on guide-boards, &c., black letters have been formed on a white ground. The black remains perfect long after the surrounding parts have mouldered away, leaving the letters standing in "relief." This is explained as follows. The black paint is made chiefly of lamp black which substance is nearly pure carbon, and is known to be one of the most imperishable substances in nature—that it is not changed by the vegetable in combination with which it is used as paint. in consequence of which the slightest film of the compound is a most durable protection against the destructive influences of the weather.

White lead will not scale off, unless varnish has been mixed with it, or the ground on which it is put, be either suffused with grease or rosin, as is often the case with pine wood.

A preventative for white lead paint turning yellow in dark situations would be a fortune to the discoverer.

A Splendid Car.

Mr. Millholland has just completed a new passenger car, at the Bolton depot of the Baltimore and and Susquehanna Rail Road Company. It was placed upon the road on Saturday last, and will add much to the comfort and convenience of passengers upon that route. It is of the usual length of a sixty passenger car, and is provided with most comfortable seats, with damask figured crimson velvet.—A most decided improvement in this car is a private apartment for ladies, so arranged with a passage around it that the conductor can pass through the train without intruding upon the privacy of its inmates. It is also provided with an office for the conductor, furnished with a desk and other conveniences. The interior is fitted up in the handsomest style—a neat metallic rack-work extends entirely along the sides of the car, over the windows, for the purpose of receiving hats, overcoats, and small articles of baggage usually inconveniently stowed in the passenger car The door and window sash are of mahogany, and the door outside is painted in the neatest style. In point of convenience, this car is not surpassed on any road in the Union. Another car of the same description is nearly completed, and will soon be placed upon the road. With these superior cars, under the guidance of the deserved popular conductors, the Messrs. Scott, the passengers will have no cause to complain.

Change of Bed in the Great Miami.

The late freshet has made quite a change in the bed of the Great Miami near its mouth. The river, after approaching within about a mile of the point at which it empties into the Ohio, makes a detour or bend of some four or five miles, and returns to about three-fourths of a mile to the place where it commences. During the recent high-water, the river cut a new channel across the neck or narrowest part of this intervening land, and last week the whole body of the river was rushing into it; the old bed being filled with standing water, without the least current.

The new cut is some twenty rods wide, three-quarters of a mile long, and made through rich illuvial soil, which for many years has been cultivated in corn.

As this curve was the only part of the Great Miami which passed through the State of Indiana, this change of channel will have the singular effect of withdrawing the river entirely from the soil of that commonwealth, and placing it altogether within the State of Ohio.

A sensible man does not seek consolation—he seeks forgetfulness.

Humorous Inventions.

There is the "Omnium Coat," which will do every thing in the world for the owner, except pay the tailor for the making of it. It is a full dress, undress, shooting, riding, walking, drawing room, fishing, counting house, wedding mourning noon, night and morning coat, and would serve as a winding sheet in case of emergency as to linen. The wonder is that all tailors who don't make it are not in the *Gazette* long ago, though it has only been discovered about a month, for it is preposterous that anybody should be without it, seeing that with it and a pair of straps, an unexceptionable toilet for large or small parties public or select may be made impromptu. The inventor, to be sure, speaks of a new description of unutterables, he had hit upon in a moment of inspiration, and, which, he says, "require no brace, fit spontaneously," and do a variety of other things only to be expected from pantaloons educated by the author of the "Omnium Coat." but the Omnium Coat is clearly so complete a fit out in itself that it would be derogatory to the reputation of the discoverer, and to the taste of a discriminating customer, were anything else in the shape of cloth to be hinted at as necessary to complete the attire.

Something, akin to this marvellous is the "Enarmostic Shirt." with which, it is quite necessary to say that no cravat need to be worn, for the name of the thing is a choker in itself. The "Enarmostic shirt" is cut on mathematical principles, and is warranted to fit any figure. One would think, however, that it would not do for nervous men at all, with such a name, and in most cases if a man were as strong as Hercules, it would be a shirt of Nessus to him, if he were the least degree bashful. Another is the "Nulli Secundus Shirt," but what sort of a thing it really is, the patentee does not say, thinking that the name is sufficiently astonishing till the applicant comes to look at it, and finds out its remaining wonders for himself. As might be expected, a far higher and more metaphorical turn of mind, characterises the bulletins of the mantuamakers and milliners, but these are matters compared with which the mysteries of Iris, and Osiris. or of Capel-court, at the present moment, are open subjects, and be they tremblingly eschewed accordingly.

Next, there is "a patent muzzle for tom-cats." This is designed for night wear, being so constructed that they can't squall when they have it on. It is placed over a cat's head and a strap lever passes from it and is buckled to the hind leg. When the cat opens its mouth a spring, which is passed up under this lever, flies off its axis and lets down the cap, which conceals a spur—this spur operates aggravatingly on the skull, and causes an immediate closing of the jaws, and prevents the escape of the offensive noise.

The next in order is the "Patent Æolian Boot Jack" This delicate machine is so constructed that it pulls off boots, mends holes in stockings, cuts corns and toenails, cures chilblains, and kicks the first rascal that offends the owner, accompanying its various operations with the sentimental melody of "Clar de kitchen."

The Last Telegraph Joke.

One of the best telegraph jokes of the season occurred in this city a day or two since, and aside from anything else, possesses the merit of being true. A "professional gentleman" had telegraphed to Buffalo, to procure the services of a lady Star, for a brief season, at a certain theatre, and received an answer through the same "highway of thought." Opening the communication handed him by the boy, he thought he spied a "game" of some wag in the matter, and he exclaimed, "You can't fool me; this ain't her writing. I've seen it a thousand times, and this ain't no more like hers than mine is!" And with a quiet wink at his shrewdness, he proceeded to give directions about the stage.

Outlawed Umbrellas.

It is said that after an umbrella has been borrowed seven times, it is outlawed and belongs to the public at large. Into whatsoever hands it may fall, it is their's for the time.

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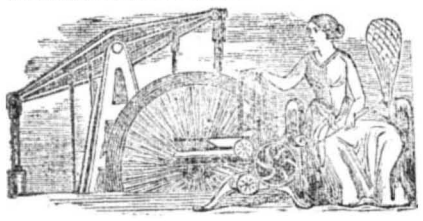


New Inventions.

Syphon Condenser.

Mr. William N. Clark, of Hartford, Conn., has lately invented a very simple and complete syphon condenser for steam engines, for which he is about to apply for letters patent. We have seen the design and are impressed with its simplicity. A more full description will be given when experiment shall have fully tested its now apparent merits.

Novel Foot Stove.

We have also seen, invented by Mr. Clark a most complete foot-stove—a real Yankee invention—a complete feet warmer. It is a small box, very light and neat in the bottom of which is fixed a common tin oil lamp, surrounded by a saucer to catch the oil if any should jumble out of the lamp. In the bottom of the box, which is all lined with tin, are small holes to supply the lamp with air, and on the rim of the lid are small holes to let the smoke escape. The lid is made of two sheets of tin about two inches apart, so that the lamp heats the tin and air between the sheets and keeps the feet comfortable and warm. The top is covered with a piece of woollen cloth and the box looks like a neat little trunk and certainly is a very superior kind of foot stove to one that is heated with charcoal, as a lamp with a very small quantity of oil will supply this stove and keep up an abundant heat for the feet for 12 hours.

Improved Clock.

Mr. J. Weiss, of Bethlehem Pa. has invented a clock which for simplicity and beauty of construction is pronounced to be a most exquisite piece of mechanism.

It is calculated to run for eight days; but its construction is so simplified that only three wheels are used for the running and striking parts, whereas in ordinary clocks, eight wheels, besides the fly-wheel, are employed. The escapement, to is an entirely new and very ingenious contrivance; the pendulum is suspended horizontally, and is supplied with a mode of compensation, believed to be perfect, that regulates the movements of the clock in the most accurate manner.

Flax Breaking, Scutching and Hackling Machines.

Mr. N. L. Williams, of St. Louis, Missouri, has invented a new machine for scutching and hackling flax, which performs its work in a very simple, efficient and economical manner. The breaking is perfectly accomplished by means of solid and polished cast iron rollers, ribbed in a peculiar serpentine form. In addition to the mode of scutching in the large hemp machines, there are attached to the same cylinders fine spiral hackles of brass, by means of which the fibre is perfectly softened and hackled, at the same time that it is broken and scutched. The process is effected so rapidly that two children can work this machine, and do the work of twelve or fifteen persons by the Belgian method of hand cleansing. Flax, properly rotted and cleaned, commands $250 per ton in Liverpool. Returns have been made to these prices on lots sent from the factory of E. K. Rugg, Esq. of Rock Island, and the flax pronounced equal to the best Flemish.

Another Hemp Brake.

The Louisville Examiner speaking of a Hemp Brake, recently invented near that place by James Anderson, says that its success will "link in future the name of Anderson with that of Whitney. On its first trial ten pounds of hemp was thoroughly broken in one minute. or six hundred pounds per hour, and the belief is, that a larger quantity will be prepared in a shorter time, when the machine has been a little longer in operation."

Electric Telegraph.

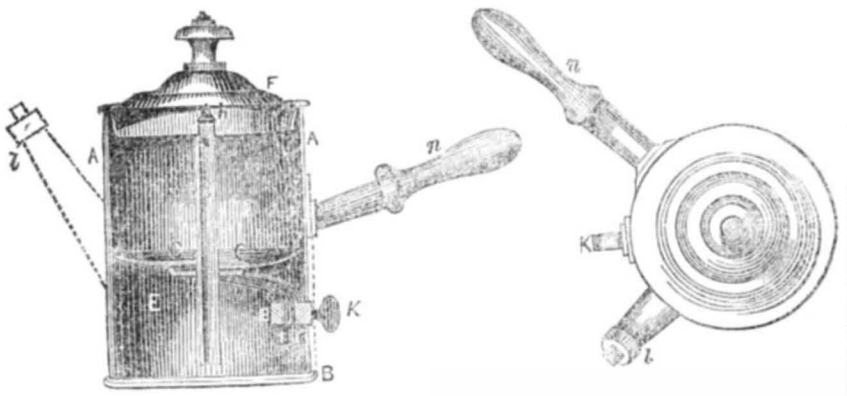
The specifications of a patent were enrolled in London. on the 23rd of September last, by Mr. Hatcher, for three several improvements in telegraphing. The first consists in arranging and disposing of magnets, in such a way that when an electric current is transmitted through them, a step by step motion is communicated to the machinery with which they are communicated; which motion may be employed in either turning an index hand, so as to point out letters, words, or symbols, on a dial plate, or in turning the dial-plate itself. The second improvement relates to the forming the metallic connection between wires through which electric currents are transmitted, particularly where such connections have to be made and broken—and the third is in the regulation of the time of a number of clocks or time-keepers.

Printer's Counting Machine.

Mr. Jos. Monroe, of Albany, has invented a machine which must be a great convenience to printers. It is designed to be attached alike to the hand and the power press, and to keep an accurate account of the number of sheets printed. There are two ratchet wheeels, both which are propelled by being attached to the cylinder of the press. Each of these wheels are connected with a dial, and showing the fractional numbers from one to fifty, and the other giving the aggregates as high as 2,500. A bell connected with the small dial gives warning as often as 50 sheets have been thrown off, while by looking at the dial the pressman can ascertain the precise number printed, even if the number be less than fifty. By keeping count of the revolutions of the large dial he can ascertain the precise number printed in a day or week. Mr. Monroe is now in the city for the purpose of introducing this machine to the notice of printers. The proprietors are Lockrow & Co. of Albany. The cost of the machine is from $25 to 30.—*N. Y. Tribune.*

This machine of Messrs. Monroe & Lockrow, must be of great value to all printing establishments, and the price is but an item of expense in comparison with the great amount of time frequently lost in counting the number of sheets printed, or remedying the mistakes of counting the reams of paper before printing. Yet the principle is not new. It has been used on the dressing frames in cotton factories, with the exception of the dial, for more than twenty years. By two ratchet wheels attached to the beams of the frame, a small bell is struck by a spring on one of the ratchet wheels, every rovolution. The wheels are made so as to move one notch for every yard dressed, so that a wheel with 30 teeth strikes the bell every revolution and tells the dresser that thirty yards are dressed on the finishing beam. We believe that some counting machines have been used in some of the printing establishments in this city for some time, and are now in use. Mr. Munroe's machine, however, may be a superior one.

NEW COFFEE APPARATUS.



This apparatus is made upon what is called the water-spout principle. Water is boiled in the lower part of the vessel and by the expulsion of the air from the upper part by the steam, a column of boiling water rises through a tube in the centre of the vessel and is thrown over the coffee in the upper vessel by a dash plate. The coffee is placed upon a perforated plate, or false bottom, and its pure, not its astringent part, is thus better extracted than by boiling, or simply scalding.

Fig. 1, is a vertical section through the centre of the apparatus, and Fig. 2, a horizontal plan. A A, are the cylindrical sides; *B*, the bottom; C C, the partition which divides D E, two interior compartments; F, the moveable cover. To partition C, is fitted so closely that there is no communication but through the tube G, with the upper and lower apartments, which tube is surmounted with a valve *h*, opening upwards, or a dash plate, *i*, is a descending passage having a tap *k*, on the outside; *l*, is the spout; *n*, is the handle.

Fig 2, shews the position of the spout handle and tap, *n*, *k*, *l*. The tube G, descends nearly to the bottom of the vessel through the perforated plate which divides the vessel.—The coffee is placed upon the perforated plate which in the engraving is represented as being soldered to the vessel, but which we think would be much better if only fastened tight to the sides by screws or other means so as to allow it to be taken out when necessary to be cleaned. A strip of fine muslin may be laid over the plate C C, on which the coffee is placed and the steam and boiling water will force the extract down to the lower compartment. The conical valve in the tube, opening upwards, and the tube itselt, is a great improvement, in fact the only one that is positively new for this purpose. Any tinsmith can make this vessel from the above engraving. It was enrolled in the London Patent Office by F H. Maller, Surgeon, on the 16th of Sept. last.

New Kind of Cloth.

Robert Phipps a weaver of Cheapside, London, has taken out a patent in England for manufacturing silk or muslin either separately or jointly with materials which have never before before been combined or manufactured together, such as wood, reed-cane, straw &c. The fabric is very handsome and is called Venetian Satin.

Rotary Boot Heel.

A boot-maker of London has invented a rotary heel to be applied to boots, so that when run down on one side by uneven treading it can be easily twisted round, thus producing another even surface, and easier locomotion to the wearer.

This is a useful invention and we go for its speedy introduction this side of the water, Which of our boot-makers will be the first to try it?

New Gun Breeching.

Henry Nock of Ludgate street, London, has taken out a Patent in England, for a new kind of breeching applicable to all kinds of fire-arms, whereby the powder is fired off in the centre and the charge says the inventor, "is thrown stronger than by breeching now used, and the guns can be used longer without cleaning than any now in use."

Ornamented Glass.

A lady of Boston, in Lincolnshire, England has obtained a patent for improvements in ornamenting glass, by which the most magnificent combination of colors, are applied the permanent development on plate glass of vivid illustrations of flowers, gems, and other pleasing natural objects.

Purifying Gas.

M. Peclet lately laid before the Society of Encouragement of Paris, a machine for the better purifying hydrogen gas for lighting.—It is composed of a horizontal cylinder, partly filled with lime water, the axis of which is covered with diaphragms of metallic canvas turned slowly. The gas is introduced into this cylinder and it is stated to be much better purified than by any common apparatus now in use.

INVENTOR'S CLAIMS.

Rasping Dye Woods.

By Charles W. Roberts, and John Hambly, of Philadelphia, Pa. Improvemeut in machinery for Rasping Dye Woods. Patented 21st August 1847. Claim.—Having thus fully described the construction and operation of our improved machine for rasping dye woods, roots. bark, &c, into powder. What we claim therein as new and desire to secure by Letters Patent is the construction of the rasping wheel of a series of parallel circular saws, secured to the shaft in an oblique position thereto, so that their rasping action will operate on the wood to the right during one half the revolution, substantially, in the manner and for the purpose herein set forth.

Window Blind Fasteners.

By James M. Evarts, of New Haven Conn. Improvement in Window Blind Fasteners. Patented 21st August, 1847. Claim—What I claim as my invention and desire to secure by Letters Patent is the method of attaching the spiral spring to the catch by a pin or bolt extending the whole length of the spiral spring, from the projection to the hole at D, and thus securing the spring, in its proper position, so that it may work freely, be secured from liability to get cramped, and being prevented from being thrown out of its place by any accident, the whole constructed, operating, and for the purpose herein described.

Lead Pipe Machinery.

By Samuel G. Cornell, of Greenwich, Con. Improvement in Lead Pipe Machinery, Patented 21st August 1847. Claim.—What I do claim as my invention and desire to secure by Letters Patent is placing the Die for forming the exterior surface of the pipe in the piston, on the hollow mandrel, as the case may be substantially as described, instead of placing it in the head of the lead cylinder, as has been heretofore done, so that as the piston is forced into the cylinder, or the cylinder forced over the piston, the pipe will be formed at the point of pressure, without moving the mass of lead relatively to the cylinder, and in combination therewith. I claim the cores for forming the interior surface of the pipe, the die and core being adjusted and held in their proper relative positions by any of the known methods.

Steam Boilers.

By Timothy Clark, of New Haven, Conn. Improvement in Safety Apparatus for Steam Boilers. Patented August 21st, 1847. Claim—I am aware that dampers for steam boilers have been operated by the pressure of the steam by means of pistons in various ways, and therefore I do not claim the opening and closing of the dampers by the pressure of the steam by means of pistons. But what I do claim as my invention and desire to secure by letters patent is the application of an elastic vessel substantially such as I have described, instead of the piston, whereby the friction of the piston is avoided, and the eperation on the damper is rendered much more uniform; the whole constructed and operating substantially as herein described.

Fire and Burglar Alarm.

This is an invention which we noticed during the Fair of the American Institute, and with which we were favorably impressed as to its great value. Since that time we have had one of them erected in our office, where all who are desirous of knowing something about it can do so by calling and examining for themselves. We shall be able to give an engraving of it in the Scientific American of next week. Messrs. Tomlinson & Hopkins, of Brookfield, Conn., are the inventors. Patent rights of counties can be purchased at this office.

A Great Day's Work.

A couple of blacksmiths had a trial of skill in Albany on Tuesday the 2nd ult., to see which was the fastest workman.—John Nolman, of Albany, and a man named Welch, of Troy, were the workmen. Nolman turned out in 40 hours 219 horse shoes, Welch, in the same time 209. Albany was victorious.

Ivory black has been found to be a good antidote to many poisons, such as *nux vomica* and strychnia.

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NEW YORK, DECEMBER 11, 1847.

Winter Fire-side Amusements.

There are seasons of rest for all animate and almost all inanimate nature. Man seeks rest in balmy sleep and in our climate, the trees and the flowers now refuse to put forth their leaves to adorn the forest or the field.—Winter is the season when from the gloom and inclemency without, old and young seek for enjoyment, especially in our rural districts, by the bright and cheering fireside. The cottage home in winter evenings, is generally the scene of innocent and happy mirthfulness. The winds without may roar and rustle but the young hearts within " care not for the storm or whistle." We like to see a happy, merry fireside. The blithe winter evenings which we have seen in our youthful days, often thrill upon our hearts like mournful. yet pleasing melodies. The object of writing these few lines, however, on the Winter Fireside, is a desire to point out to our young mechanics and the families of our subscribers, the utility and benefit to be derived from mixing the useful and instructive along with the innocent and entertaining. In our villages it is too common a custom for our young men to congregate in the stores or some favorite tavern, where they spend their winter evenings in vain and unprofitable conversation. In our cities, the theatre receives its votaries, and leads our youth from scenes of transport to scenes of shame. Much as we may boast of our civilization, yet in some things we with much profit, may take lessons of wisdom from more benighted and less favored countries.—In bleak and barren Iceland the natives spend their winter evenings in a most delightful and useful manner. One member of a family generally reads some useful book while the others are performing some light and profitable labor. The older people correct the reader, who is generally the youngest, or varies the entertainment, for it really is such, by anecdotes springing out of the subject of the book, and in this manner the natives of that inhospitable clime spend their winter evenings cheerily and profitably, and by these means, considering their opportunities and situation, the Icelanders are all intelligent, moral and industrious. Such a system as this might be very judiciously adopted in many of our families—in some, we know that it is, and they are distinguished among their neighbors for their intelligence and simple virtues. Young men who have no opportunity of attending Lyceums and Lecture Rooms may spend their winter evenings in reading good works and making interesting experiments, either in mechanics or chemistry. The articles that are now publishing in the Scientific American on Electrotyping and Electro-gilding, may form the basis of many interesting experiments to those who desire to be scientific and who prefer sound knowledge to merely vain and foolish amusements. The cost of the apparatus, is not over two dollars, and we have been so plain, that from our descriptions, almost any young man can make an apparatus himself for fifty cents.

Let our young men remember that Franklin, Whitney, Fitch and Telford, were all poor men's sons, and derived the most of their great knowledge during winter evenings, by reading good works when others were wasting their best hours " on trifles light as air." Robert Nichol, the author of the beautiful verses on our first page this week, was reared amid such poverty, that his first effusions were penned on coarse brown paper, by the light of a winter's fire, as his only taper. Let not the examples of those illustrious men whose names we have mentioned, pass away from before the reader's mind, without profiting by them during the long evenings of the present winter.

The population of Texas is now estimated at about 123,000.

The British and North American Royal Mail Steamship Company.

This enterprising Company has four vessels of enormous power in course of preparation Their names are the Europe, the Canada, the Niagara and the America. To give an idea to those who have never seen these monsters of the deep is utterly impossible. The America, which is similar to the others, is 30 feet wide inside, and 250 feet long. She is 1800 tons register, and is being fitted up with engines of 700 horse power, and is a magnificent vessel, both as regards size and strength, being built of different layers of planks, which amount to a foot in thickness, and the lower part, after the fashion of whalers, has an additional outside lining of planks about three inches thick. R. Napier, of Glasgow, Scotland, is now fitting up the engines in all of these vessels. With a full complement of passengers, for whom splendid accommodations is being made, along with her crew, she may carry about eight hundred persons. She is therefore a vast floating village. The fitting up is in a style of magnificence never before seen in the Clyde. The berths are roomy and elegant and the various departments all commodious and elegant. The design of the interior is such as to secure comfort and convenience to passengers and crew. The engines in their magnitude and splendor are said to be unequalled. Each of these four veesels is to have four boilers, and each of these boilers is about 16 feet long, twelve feet broad and twelve feet high. They are built of the best iron and the workmanship is most masterly. The framing of the engines is powerful and complete. The huge beams are of malleable iron of sixteen or twenty feet long, and from eight to twelve inches thick. The cylinders are about nine feet in diameter, and ten in depth, and the entire machinery is made with the exactest mathematical precision, and finished in an exquisite manner. The design of the engines at once shows the perfection to which the enterprising company have carried their business. The huge beams are fitted into each other so as to defy the keenest eye to detect the joint. Even in most difficult curves where brass castings are fitted in, the jointing is perfect, and the parts finished are polished in the highest style. The double engine and the boilers, when fitted up, will amount to nearly six hundred tons.

These vessels are all launched and the engines in a forward state, and the first of them may be expected in this port about the latter part of this month or early in January. The large docks in Jersey City are now ready to receive them, and that city, whatever others may think, will yet be a great seaport. The New York and Erie Railroad and the European line of steamers, will tend to make Jersey City a large and flourishing place.

Death of Rev. Charles Van Loon.

We perceive by our Poughkeepsie exchanges the death of this eminent young minister.—We had been acquainted with him for a number of years and justly esteemed him for the amiableness of his disposition, his talents and moral courage. He has departed this life young in years, (being only twenty nine,) but ripe in virtue. Charles Van Loon was pastor of the First Baptist Church in Poughkeepsie, and was well beloved by his congregation and respected by all who had the pleasure of his acquaintance.

Astronomy.

Dr. J. P. Nichol, L. L. D., of Glasgow University, the distinguished astronomer, is now in Boston, and is to give a course of lectures in that city before proceeding South. Professor Nichols is the author of the " Architecture of the Heavens," a work which is justly celebrated both for its profoundness and perspicuity. The Professor was once a firm believer in the unresolvability of the *nebula*, and was the first astronomer entertaining this belief who acknowledged his error publicly, after the Telescope of Lord Rosse had resolved the nebula in the constellation of Orion.

The greatest study of Mankind is Man.

He that never turns his thoughts inwardly, is like the ostrich that buries its head in the sand to hide from pursuing foes. He that studies his own heart knows both himself and others.

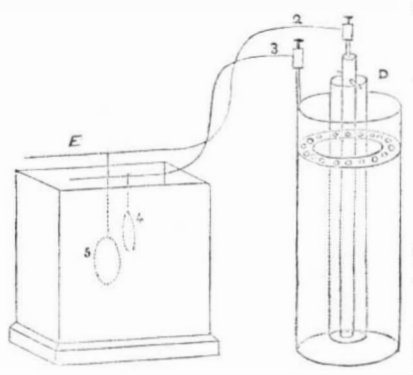
Electro-Gilding.

PART II.

Gilding is conducted much in the same manner as plating, only requiring a little longer time and sometimes hot solutions. Plating by means of the single cell is done on a scale of some magnitude in England and also to some extent in our own country, but there is another method far superior to that of the single cell.

In a single cell silver and gold are always obtained from the oxides, as previously explained. That is, for every ounce of these metals deposited, a quantity of oxide must be furnished, which shall contain in it an ounce of pure metal, and hence for every ounce of pure metal deposited, far more than an ounce of oxide is consumed. The time and trouble to make the oxide of these metals is considerable and expensive, and far exceeding the actual cost of metal employed, taking all things into consideration. The same object can, however, be accomplished by the addition of another cell, and at much less expense as in the accompanying cut..

DOUBLE PLATING CELL.



This is a representation of Daniel's Cell of the usual form. D, in combination with another cell E, (as Daniel's cell has been explained and described before, we need not particularly describe it.) It is connected with a sound box or cell E, by the wires 2, the positive, and 3, the negative wire. 5, is the medal or mould to be plated, and 4, a rod of either gold or silver as a supply. The cell E, is filled with a solution of cyanide of the metal and when the electric action is commenced, the mould 5, is immersed in the cyanide and as the metal is separated from the solution by the electric agency, the strength of the solution is kept up by the plate 4, as the *cyanogan nascent* at the positive plate has been found to combine with silver and gold, thus furnishing a means of gilding and plating, by the use of a generating cell to furnish the electricity, along with a decomposition cell to contain cyanide solution, saving thereby the continued adding of the oxide of either the gold or silver.

This is the Battery process. The generating cell need not be large. The deposition or decomposition cell, may be of porcelain or glass. The size of the cells, of course varies according to the extent of the experiment.—The zinc in the generating cell, need not be quicksilvered, but used plainly, and salt and water may be used to excite the metal. The copper cell should contain the sulphate of copper. A number of these cells may be used connected together.

There is an instrument lately invented, called the Voltaic Condenser, which promises to be very useful in electro-plating and gilding. Its property is to give to one cell of a battery the intensity of two.

It is well known to electricians, that at the moment contact is made with a battery, so as to send a current along a wire in one direction, a secondary current, which lasts but an instant, is induced in the wire in the reverse direction, and when contact is broken so that the original current ceases, the secondary current is made to move in the direction contrary to its original motion, and therefore in the same direction, as that of the primary current, when contact was first made The intensity of this current greatly depends on the quantity, the form and wire employed, and if the wire is coated with silk and wound round a bobbin, the intensity is much increased. The voltaic condenser is made by using 100 convolutions of three stout copper wires and placing within this coil a bar of soft iron. The object of this is, to convey the battery current and with it the secondary current, spoken of previously, through the solution to be decomposed.

The cuts which we have already given, will explain fully all the apparatus needed for electrotyping and electro-plating and gilding. We shall, therefore, in our future articles on this interesting subject have no more need of engravings for explanation, as the compounds of gilding and bronzing liquors will be the principal subjects of discourse.

Mechanics.

Remember, that in your operations you should be regulated by system. It is utterly useless to expect fortunate results, unless they are essayed on philosophical principles. The laws which pervade and govern the material world, are regular and uniform, and it is only by proceeding in conformity with their obvious and unequivocal indications that we can reasonably expect to secure success. In the mechanic art this observance is an indispensable duty. We have known some mechanics who appeared to have no regular system in anything, and we have never known such to succeed in their business except by accident. The adaptation of means to ends, is nothing more necessary than in the mechanic art.

Rights of Married Women.

On the 13th inst., the Vermont House of Representatives passed a bill to protect the rights of married women in property belonging to them before marriage. It provides that the rents, issues and profits of the real estate of any married woman, and the interest of her husband in her right in any real estate which belonged to her before marriage, or which she may have acquired by gift, grant, devise or inheritence during coverture, shall be exempt from attachment for the husband's debts. We believe the Senate has yet got to act upon it.

The Hemp Crop.

A merchant of St. Louis, writing to the editor of the Cincinnati Gazette, says :—

" The most carefully formed estimates of the hemp crop of the Missouri river give the product this year as, in round numbers, 13,000 tons. And to this, the product of the whole West beside, which may be set down at 18,000 tons, and you have an amount equal to 30,000 tons—from this deduct the quantity used in the West in manufactures, say 12,000 tons, and you have for export from 18 to 20,000 tons, of more than equal to the requirements of all Northern seaports, and leaving a considerable quantity for export.

Canal Business.

An avalanche of produce poured into the basin of Albany from the Erie Canal, between 9 A. M. on Saturday, and the same hour on Monday last. Amongst the quantity were 47,000 barrels of flour, 52,000 bushels of wheat, 20,000 bushels barley, 20,000 bushels oats, 260,000 lbs. cheese, and 160,000 lbs. of butter. We shall not starve yet.

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White's Patent Fire Engine.

A trial of this engine lately took place in Glasgow, Scotland, by Mr. Robertson, of the Fire Brigade of that city, and as it is singular in its principle, the following account of its operation and mechanical construction will not be uninteresting. The experiment took place before a number of scientific gentlemen and its projecting power was tested by sending a jet to the top of the Cross-steeple, a height of 135 feet, with a nozzle 7-8ths of an inch in diameter, and subsequently attained the same elevation by two nozzles of 5-8ths of an inch each, or one of 1 1-4 inches diameter. One of the ordinary engines was played afterwards, but fell short at least 30 to 40 feet of the jet of White's engine. In the working of this engine the patentee, instead of employing two pumps or barrels, as in the ordinary engine, has substituted twelve or more as the occasion may require, so arranged as to discharge their contents into an air vessel or vessels, whence it escapes to the fire from the hose in the usual manner. It is clear that by this arrangement every man is independent of another, and each pump is a perfect fire engine in itself, therefore the machine may be worked by one or more men up to its full compliment; the quantity of water discharged being according to the number of men employed to work the engine. In consequence of this arrangement each man is enabled to throw a pressure of 60 lbs, or upwards, upon the square inch of water of his respective pump, which in the ordinary engine would require the united power of twenty men to produce an equal pressure. In the ordinary engine, the two pumps being connected with a common centre, and worked by a beam, it is evident that the men can help or hinder at pleasure, without the possibility of being detected; but by each man working his own pump he would be found out instantly. It is obvious that if only one man should be found to work his pump, and another to conduct the hose, they can instantly commence operation; while in the common engine there are always six or eight men required to make the engine work at all, and even then very inefficiently, in consequence of the great friction in the barrels. To obviate the air mixing with the water, a metal shield perforated with small holes is placed over the top of the air vessel, above which is placed a covering of vulcanized India rubber, and over that an air tight dome, which is secured by a common joint, and the space above charged with the common air to about two atmospheres, which by the action of the pumps is further compressed, thereby rendering an uniform powerful elastic spring which maintains the jet without the rising and falling of the column which is to be observed in the common engine; consequently the water can be thrown to a considerably higher elevation than when the velocity of the water is to be overcome at every stroke of the engine.

Improvement in Weaving Looms.

Mr. James Nield, of Taunton, Mass., has taken out a patent for the following improvement in power looms, viz. the combination of two revolving series of shuttle boxes applied respectively to both ends of the lay of the loom, and made to rotate backwards and forwards. By the employment of two revolving series of shuttle boxes, instead of rising and falling ones, very important advantages are gained in their combined operation. When a series of boxes is composed of four or more, and they are arranged the one above the other so as to rise and fall, if a shuttle is to be thrown from the first box and to be succeeded by one in the last box, the whole of the series must be raised upwards or depressed, as the case may be, before the shuttle of the last box can be ejected therefrom. This requires a great waste of time. Now when the series are arranged around a revolving axis or shaft, or what are termed revolving boxes, the first box of the series may be said to lie directly alongside of the last one. To throw the last shuttle the series would only require to have its movements reversed the breadth of one box. Thus it will be seen a great saving of time can be effected in "shot about" weaving. The arrangement of the boxes around an axis to revolve enables him to bring many of them into action, much sooner or with more despatch, than where they arranged in line with each other and the one over the other, and are made to rise and fall alternately. He uses the pattern belt of changeable wires, external and central links as made, coupled together and to a sprocket wheel, in combination with reversing arms, and supplementary wires of the pattern belt, or other equivalents, as combined with the mechanism for rotating either series of shuttle boxes; the said arms and wires being for the purpose of reversing the motions of the boxes. He also uses the weighted lever or any equivalent therefor, in combination with the lever and strap motion of the loom, for the purpose of arranging the motion of the sprocket wheel and pattern belt, or the pattern plate, when a filling thread breaks.—Mr Nield claims one or more inclined planes or curves as applied to or combined with the loom frame or lay, and revolving series of shuttle boxes, for the purpose before specified. He also claims the contrivance of elevating the loose filling or weft threads out of the way of the stop motion of the loom, the same consisting of the arm arranged and operated as specified; also for the combination of pins, notches, or other similar contrivance with the front end of the revolving series of shuttle boxes, in manner substantially as set forth.

Mr. Nield in his claim and specification says, "I consider the combination of a circular plate and changeable screw pins inserted in it as explained and as applied and used as a mechanical equivalent for the pattern belt above described." Does Mr. Nield claim this as his invention, and have letters patent been granted for this kind of pattern wheel to him? If so, we should like to know it, as we know who was the original inventor.

Opening the Great Western Railway to Cheltenham.

On Saturday last, the Great Western Railway Company brought into use its broad guage line of rails from Gloucester, to Cheltenham, laid down on the Gloucester and Birmingham Railroad, which passes by Cheltenham, but which is on the narrow guage. The seven miles therefore from Gloucester, to Cheltenham have now a mixed or double gauge. The narrow guage rails remain as before, and along them the usual trains pass between Gloucester and Birmingham; but by the side of this pair of up rails, and also by the side of this pair of down rails, the Great Western Company have laid a third rail, which with one rail of the adjacent pair of narrow guage line thus serving also as the inner rail of the broad guage line, and the outline of the narrow guage lying under the broad guage carriages as they pass along. The traveller from London to Cheltenham now proceeds to Gloucester, as heretofore, but instead of going into the station there, and then coming out again in a somewhat similar direction at first, or at least in a line forming an acute angle with the line of entrance, the carriages for Gloucester are detached and sent in, and the Cheltenham carriages proceed by a short "avoidance line" to join the Gloucester and Birmingham a little way out of the station, striding across this narrow guage line, by the method just described. On arriving within a few yards of the old Cheltenham station, on this Gloucester and Birmingham line, the double guage terminates; the broad guage line curving off into the town of Cheltenham by a new way of three-quarters of a mile, the narrow guage continuing its course to Birmingham. It has been thought that the mixture or concurrent use of two gages on the same road must cause complexity and much risk of accident. No narrow guage train can enter or leave Gloucester and Birmingham line where the broad guage trains enter and leave it! there is on the whole of the double guage distance no station, no siding, no spot where some trains are to branch of the line and others of the same guage to proceed further along it. Hence the ordrnary risk attendant on crossings or junctions is avoided, in consequence of the command obtained by one rail of each pair not being common to the trains that are to go on and the trains which are to turn aside. Thus the broad gauge train into Cheltenham turns out of the main line by means of fixed points, requiring no switchman's attendance, the broad guage not being continued any further along the main line; and the narrow guage trains are kept steadily pursuing their way on towards Birmingham by the means of a "check line" at this point, the whole arrangement being also facilttated by slightly rising one rail and depressing another. The rails are all new.

The line, as at once a broad and narrow guage line, was opened to the public on Saturday, and a special train brought down a large party to Cheltenham, the frequenters of which town will now be spared the annoyance of a break of guage and change of carriages at Gloucester.

The above was taken from an exchange, the Cheltenham Free Press.

Decrease in the British Revenue.

By the quarterly accounts of the revenue, it appears that "the net decrease on the quarter ending on the 10th inst., compared with the corresponding quarter of last year, is no less than £1,509,230, whilst on the year just ended, compared with the preceding year, ending 10th Oct. 1846, the net decrease amounts to £1,042,268. The absence of the China money in both abstracts will account in some degree for the deficiency on the year; but the great decrease on the customs, and still more on the excise, amounting together in those articles alone to £1,103,471, indicates but too plainly the cause of this serious deficiency on the quarter just ended. The reaction of the late speculative excitement in railways and commerce is now telling upon the means of the people; and if, with the present accounts before us, we see these results, proving that months ago a smaller quantity of articles was consumed, as in the malt duties and the duties on spirits upon which six months credit is allowed, it requires no very great sagacity to forsee that with the actual paralysis in all branches of trade—when the future accounts come forward illustrative of our present position—those statements must still further exhibit a most unfavorable picture of the public revenue of the country in those branches of revenue."

If Great Britain pursued a right colonial policy, her inhabitants might be the most confortable in the world. In a conversation with one of the Ministers of the late Cabinet, we expressed ourselves freely upon this subject and he acknowledged the correctness of our views. She has every variety of soil and climate in her colonies, why then should there be 60,000 beggars in London alone. There is "surely something wrong." It can be remedied, but not by such a colonial policy as that which sacrificed the rich minerals of Nova Scotia to the Duke of York, who parted with them for the fascinations of a Deliah.—Ed.

The Ohio River.

"The Ohio, including the Alleghany which may be regarded as the same river under another name, is twelve hundred miles long. At Cincinnati, which is about equidistant with Pittsburg, to its confluence with the Mississippi, it is 534 yards wide, which may be assumed as its average width. Its annual range here, from low to high water, is about 50 feet; its extreme range on record, 64 feet, (at the time of the flood in 1832.) It generally reaches its lowest stages in August, September and October, and its greatest rises in December, March, May, and June. Its current when low does not exceed two miles an hour, when at a mean height three miles, and when higher, and rising four to five miles. Its immediate valley has an averege width of one mile. It has the following tributaries; the Monongahela, Alleghany, Beaver, Canawha, Muskingum. Hoeking, Scioto, Great Sandy, Great and Little Miami, Licking, Kentucky, Wabash, Salt, Cumberland and Tennesee, which drain a region of upwards of 120, 000,0000 acres—an area three times larger than all New England, and as large as all the Atlantic States north of the Potomac.

Newark Franklin Institute.

Prof. Mapes, who has entered with much enlightened zeal into practical agriculture near Newark, has been instrumental in forming an institute which already numbers several hundred members. Meetings are to be held every Wednesday evening.

Distance and Time by Railroads and Steamships.

At the rate of fifteen miles per hour, as is proposed for the steamers to be built for our navy it will require but eight and a half days from England to New York or other ports, but say ten days. From New York to the Pacific, three thousand miles by railroad, at thirty miles per hour, allowing nearly one day for detention, five days. On the great western road from London to Bristol, passengers travel daily at the rate of fifty miles per hour with perfect safety. From the Pacific coast to Chang-hae, in China, at the mouth of the Yang-tse-Kang, which crosses the great canal where all the commerce of the vast empire centres, is five thousand four hundred miles; at fifteen miles per hour, (which can be performed as easily on the Pacific as twelve miles on the Atlantic.) allowing one day for coaling, &c., sixteen days.

From London via New York, to Changhae, thirty-one days.

From New York to Chang-hae, twenty-one days.

By sea-voyage from London or New York to China, one hundred and ten to one hundred and sixty days. requiring a voyage out and home from ten to twelve months.

From England via New York to Australia thirty-one days.

From New York to Australia, twenty-one days.

From England via New York to Manilla, thirty-four days.

From New York to Manilla twenty-four days.

From England via New York to Java, thirty-five days.

From New York to Java twenty-five days.

From England via New York to Singapore thirty-seven days.

From New York to Singapore twenty-seven days

From England via New Pork to Calcutta thirty-nine days.

From New York (one and a half days for coaling) to Calcultta, twenty-nine days.

On these different routes are numerous and convenient islands for depots, coaling, &c., and an abundance of coal.

The Future.

We are never partial to those who are looking always to the future for happiness. Now is the only time to enjoy yourselves, and the only time that is really your own. To hear you talk and see you act, one would suppose December lasted all the year, and that never a blossom or a flower smiled in your path.—One lesson we would like to have you remember—it is this:—No man who is not pleasant and contented now, will not be so by and by. There will always be a lion in his path—a cloud beneath his sky and a veil about his heart. There will be no better time than the present; there will never rise brighter suns, blow softer breezes, smile sweeter flowers, or dawn happier days. Remember this and become now what you intend to be in the far distant future.

Fortunate Discovery.

A lady returned to Boston last October, after an absence of six years in India. On sending to one of the banks for a box containing $1500 worth of silver plate which she supposed had been deposited there, she learned to her great surprise that no such deposit had been made there. Search was then made without success among some old furniture which had been stowed away, in an attic in Tremont Row; but a second search by two of the city officers, discovered it was found safely stowed away among the furniture, where it had remained safely the whole six years, having been carried there by the cartman by mistake.

Cunard Docks.

The Docks now in course of erection for the Cunard steamers in Jersey City, have sunk considerable and are still settling. The contractors it is said must suffer a loss of twelve or fifteen thousand dollars in order to make them satisfactory to the company, aside from their loss on the contract.

Men of genius say things the least foolish and do things the most foolish in the world.

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TO CORRESPONDENTS.

"W. R. of Conn."—A patent can be obtained for a new application of machinery but not for a new application of a machine.—Blanchard's Gun Stock Machine, covers the ground of axe helve and last machines, as has lately been decided in Philadelphia. You can secure a patent for your plan of making the cops. We think the invention is entirely new, but your claim will have to rest upon the cone cam and winding ring for making the cops, with band threads upon the spindle. There is a new invention of combining the mule and throstle frame in Mattewan, but the yarn is wound on a bobbin still, not made into a cop.

"J. V. of Buffalo."—The editor of the late Mechanics' Journal has been requested by a number of old subscribers to that paper, to continue the Scientific American—this will be done whenever the subscription fee is forwarded.

"J. A. of N. Y."—Among the great many Straw Cutters which we have seen, not one of the same description which you write about has come to our notice. There can be no doubt of its great lever power, but it would not be so speedy as the rotary cutters, although far easier made.

"D. C. of Mich."—We answered your former queries in our notices to correspondents. We are not aware of any patent having been granted for a machine having the augur making two revolutions for every one of the crank. No patent can be obtained for it, as the principle is not new.

"T. J. of Geneva, N. Y."—We are much obliged to our friends of Geneva for their favors. Volume 3 of the Scientific American, will be the best Mechanics paper ever published in this or any other country at the price. We are happy to see the mechanics of Geneva appreciating its value.

"J. V. K. of N. Y."—You must remodel your whole machine. Its operation is out of all proportion. It is not our part to do this and your other business. We are not to finish other people's inventions.

"J. M. N. of Me."—Your volume of the Scientifie American was sent by Express last Thursday week.

"E. R. of Syracuse."—Yes? Send at our expense.

"A. C P. of Boston."—Your request cannot be complied with.

"J. S. of Portland, Me."—We have answered you by mail and have sent the desired information.

"R. R. of Farmers Mills."—We will have something for you in next week's paper.

"J. W. J. of Mass."—It is our opinion that in soldering sheets of metal together that it is an electric action which causes the union. We can solder without the common solder or without using rosin. Use the muriate of zinc for this purpose and you will perceive that according as we have heretofore recommended, this will answer your purpose. Try it also for copper.

"R. G. R. of N. Y."—There is no other method of coloring yellow so simple as that we have already described.

"L. S. of Schenectady."—We have heard many complaints respecting the neglect of our U. S. officers. The Protections out of this State and Ohio are crumbling, and they will in this State too, unless there is a return to first principles.

"E. R. of Syracuse."—We did not receive your letter till last Monday. It was not directed correctly. We will not be journeying West this winter. We will attend with pleasure to your request.

Patent Agency.

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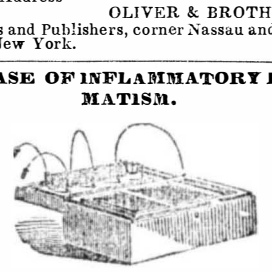

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On the Manufacture of Gas.

Prepared for the Scientific American.

In 1736 appeared the first account of attempts to distill coals in close vessels or retorts, and collect the products of gas in bladders for experiments; and which experiments were frequently made and continued up to 1792, a period of upwards of 50 years, during which time, although the practicability of easily procuring a cheap and beautifully artificial light by the distillation of coal had been so repeatedly manifested ; still the tardy nature of men's minds, and the total absence of disposition for improvement, prevented any steps being taken for the introduction of so valuable a discovery.

In 1793, Mr. Murdoch, a talented engineer of the time, residing at Redruth in Cornwall, where he was employed in introducing the then newly invented steam-engine of the celebrated James Watt, for draining the deep mines of that country, constructed an. experimental coal-gas apparatus, and lighted his dwelling. After this he removed to Soho, near Birmingham, to the steam-engine factory of Bolton and Watt, where he lighted their manufactory and other places. The plan adopted at the time was of the most primitive kind, being merely a close cast-iron vessel fixed in a furnace, on which, with its being partially filled with coal, and made red hot, the gas was generated and conveyed away in pipes in its crude and impure state to to the burners. In the introduction of such a valuable discovery, this state of things could not long remain; the shopkeepers soon discovered the injurious effects ot sulphuretted hydrogen on their goods, whilst the air of rooms became so contaminated by sulphur and carbonic acid, as to he extremely unwholesome, and depressing to animal life. Lime was found to be a complete, convenient, and cheap material to remedy the evil, for the discovery of which there are several claimants. It was at first mixed with the water contained in the tank of the gas-holder; the gas being delivered by a pipe a little below the surface, it rose in bubbles through the lime water, and as a strong affinity exists between the impure gases and lime than for carburetted hydrogen, this gas only was set free, and escaped above the water ready for use. This plan was soon found very inconvenient, from the difficulty of removal when saturated; the separate lime vessels remedied the defect, which, with the hydraulic main, are said to owe the honor of their invention to the fertile genius of Mr. S. Clegg, the former in 1805, and the latter in 1809. About this time gas lights were exhibited in London by Mr. Winsor: and by 1819, 288 miles of gas pipes had been laid in the streets of London. In the construction of apparatus for the production of gas, there is first, the distillatory process in cast-iron retorts, secondly, the refrigeratory, or cooling process, which partly takes place is the hydraulic main, and finally in the condenser; and thirdly, the purifying process, in which the impure gas, as it escapes from the condensers is rendered fit for immediate consumption.

In no parts of the gas apparatus has there been greater ingenuity displayed than in the retorts; and indeed, as they form the principal item of expense in wear and tear of a gas station, it is of the highest importance to ascertain the kind and form which shall produce the greatest bulk of illuminating gas from a definite weight of coals, and that they shall be as durable as possible, at the least cost—cast iron ones seldom lasting more than from nine to twelve months, when they become old iron of the most valueless description. Cast iron is almost universally used, the dimensions being from 6 to 7 feet long, 1 to 2 feet wide, 9 to eighteen in. high, from 1-1-4 to 1 1-2 in. thich, and weighing from 10 15 cwts. The forms are various—square, round, oval, flat D, high D, kidney-shaped, &c.—but the D shape is found the prevailing form. At the old Company's works, at Liverpool, wrought iron retorts have been used for many years, the sides and top being made of iron plates, rivetted to a cast iron bottom—length 6 to 8 ft., and width about 4 ft., and it is stated that they were found more efficient and economical than cast iron ones. At Glasgow, Paisley, and many other places in the north of England, retorts are made of fire-clay, generally of larger dimensions than those of cast-iron, the form being D. shaped and from 2 or 4 to 5 inches. The manner of setting iron retorts is as much varied as their forms. In small towns, requiring but a limited supply of gas, they are set singly; but when a greater supply is necessary, they are set two or three in one fire: and in the largest establishments, the furnaces are ot such various dimensions, as to contain from three even to nine retorts.

With respect to the production of gas, as to quantity and quality, there is as great a variety as there is in the coals from which it is made—some Scotch coals producing as much as ten thousand cubic feet per ton, which would fill a room 100 feet long, 10 ft. high, and 10 feet wide. English coals do not produce so much, but may probably be taken on all averages at about 8,000 cubic feet per ton, and as the greatest portion of the gas is given out in the early part of the distillation, it follows that it must pass rapidly from the hydraulic main: yet, however short the time may be, a large quantity of tar and ammonia is reduced from the gaseous to the fluid State in that vessel, and runs off in the lowest part of the main to the tar cistern.

(To be continued.)

To Make Steel.

For the Scientific American,

Take wrought iron clean scraps of any kind one hundred pounds, black oxide of manganese 2 pounds, put this in a crucible with a lid fitted and luted tight to prevent the carbon from escaping and submit to the action of intense heat for some time : afterwards pour it in moulds, which must be warmed and greased to preveat the metal from sticking.—It requires practice to make the metal sound, by taking it from the furnace at the proper time It is afterwards submitted to the trip hammer to close the grain, when it will be steel, as good as any imported. I have tried a number of experiments and have produced steel in this way which good mechanics have pronounced to be of a superior quality.

The quantity of cast iron may be varied, more or less, according to the quality of steel wanted. If it is wanted soft, the less cast iron is put in. With charcoal in different quantities I have made, along with scrap iron, steel which when tested proved better than some imported.

Steel can be made in this manner much cheaper than what we now pay for it, and, as all we use is imported, these experiments should at least arrest some attention from those who can employ a large capital to go into the manufacture. I believe that it can be made with profit of 11 cents per pound, thus affording a good field to invest money at the present prices of steel.

I am now trying some experiments on cast iron alone, the result of which you shall soon know. Yours, &c. J. P. Jeffreys.

Color from St. Johns Wort.

The Massachuseetts Ploughman says: "the flowers and tops of this plant contains a juice soluble in water, spirits oi wine, or vinegar. With the first two liquids it forms a red color, resembling blood, and the latter a splendid crimson; when alum and a portion of potash are added to a strong solution of juice in water, it becomes a permanent yellow dye for cloth, cotton, paper &c.,

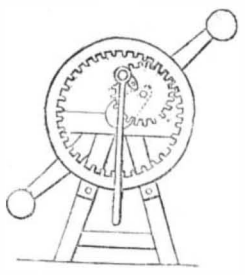
Would it not be better to use the alum, as a mordaunt, then clear up with the potass.—Ed.

Iron.

Hannibal challenged the prudent Scipio to single combat. Swords in those days were made of copper; but Hannibal met Scipio with a weapon of new metal, which so glittered in the sunbeams, that Scipio was alarmed suspecting treachery; whereupon he cried, "*Irun*!" and the metal was so called from that time, (Iron.)

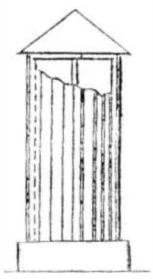
MECHANICAL MOVEMENTS.

Circular from Perpendicular Motion.



The above is an arrangement showing how that circular can be communicated from rectilinear motion. The piston is represented here as attached eccentrically to a small cog wheel which works in a larger cog wheel connected with a weighted lever, for the purpose of assisting the piston at the *dead point*, as the weight on one end of the lever at the exact *point* exerts its power of gravity to equalize the motion of the piston in its circular rotations. For this motion Napoleon awarded a medal in 1801, but it is far inferior to a simple crank, as any mechanic will immediately see, and beside if two cylinders were used in place of one, two pistons attached eccentrically to drums fixed on a shaft is not only a far more simple method to obtain the same result, but with far less friction—the grand desideratum. We have seen engines having the piston attached to the centre of a crank and a drum fly attached to each end ot the horizontal crank shaft, and machinery driven by bands from the broad flys. This was considered a neat and simple arrangement, but we have yet to learn that it is not inferior to the *walking beam* arrangement, or the plan by by which our horizontal engines are now constructed although the latter is very near the principle spoken of.

Pneumatic Engine.



This is another arrangement of the Air Mill a cut of which appeared in No. 4, of this volume. The arrangement here is to show that by protecting one half of the sails supported on a perpendicular shaft by means of a circular casement of shutters, a similar effect is produced to that represented in No. 4. It is our opinion, however, that neither this nor the other modification of a windmill, are as efficient as the old and simple plan.

Scraping Mezzotint Engravings.

For the Scientific American.

This kind of engraving has great softness of effect along with the strongest relief and peculiarly suited for pictures of females and young persons, as it gives the appearance of painting to all figures more than either etching or line engravings. Mr. Le Blond was the person who discovered this art, an invention which was said to be the result of accident in 1762, in Paris. It has often been attempted to print mezzotints with different colors, so as to supersede paintings, but this never can be. Sculpture and oil painting will never be superseded, except in a more ready way of duplication than by the pencil or chisel. Mezzotint plates are prepared for engraving, by rocking a kind of fine file with a curved face, over the plate until there are indentations all over the plates fine as the finest points of needles, and after this the figures and different shades are scraped out with fine tools adapted to the purpose. This art requires much patience, skill and taste and above all a fine knowledge of light and shade. We have some fine mezzotint engravers in this city, among which the names of Sadd and Ritchie are well known. G. R.

Prof. Farady, says:—"A grain of zinc, contains as much of the electric fluid as would supply 800,000 charges of a battery containing a coated surface of 15,00 square inches.

Glue for Cementing Paper, Silk and Leather.

Take of isinglass and parchment size each one ounce; of sugar candy and gum tragacanth each two drachms. Add to them an ounce of water and boil the whole together till the mixture appears (when cold) of the consistence of glue, Then form it into any figure that fancy may dictate. If this glue be wet with the tongue and rubbed on the edges of paper, silk or fine leather that are to be cemented, they will on being laid together, pressed lightly and suffered to dry, be as firmly united as other parts of the substance.

India Ink.

Ink equal to China or India Ink may be made by dissolving six parts of isinglass in twelve of water, one part of Spanish liquorice in two of water, mixing them when warm and incorporating gradually with them one part of the best ivory black, stirring well. When the mixture is complete it is to be heated in a water bath until so much of the water is evaporated as to leave a paste which may be moulded into any required form.

Russian Ink Powder.

Blue galls two ounces, gum arabic half an ounce, copperas four ounces, all powdered and well mixed together with a portion of logwood. All must be fine as flour.

Yellow Ink.

A little alum added to saffron makes a very good yellow ink ; thicken with a little fine gum to the proper consistence for writing

Substitute for Potatoes.

A large importation of West India yams to Britain has lately taken place in consequence of the anticipation of potatoe rot, which has given a a stimulus to the cultivation of this tropical substitute for that root. Some tons have been sold for the purpose of cattle feeding. and a quantity has also been sent to Ireland, to test their applicability to feeding pigs.

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